

WHAT IS CLAIMED IS:

1. An electrochemical gas probe for measuring an amount of gas in a molten metal comprising:

a sensing unit having a reference electrode, a sensing electrode, a solid-state reference mixture adjacent to the reference electrode, and a conductor between the reference electrode and the sensing electrode; and

a supporting unit having a main support, a protection cover and a stabilizing material,

wherein the stabilizing material is between the sensing unit and the protection cover of the supporting unit.

2. The electrochemical gas probe according to claim 1, wherein the main support includes ceramic.

3. The electrochemical gas probe according to claim 2, wherein the main support and the protection covers are formed of the same material and as one body.

4. The electrochemical gas probe according to claim 1, wherein the main support includes graphite and is electrically grounded.

5. The electrochemical gas probe according to claim 1, wherein the sensing unit further includes an electrical lead wire for electrical connection to a controller, the electrical lead wire having a diameter less than 200 μm .
6. The electrochemical gas probe according to claim 1, wherein the solid-state reference mixture includes a metal, a hydride of the metal, and an oxide of the metal.
7. The electrochemical gas probe according to claim 6, wherein the metal includes a material selected from the group consisting of Ti, Zr, and Ca.
8. The electrochemical gas probe according to claim 1, wherein the conductor is a proton conductor and includes calcium zirconate doped with indium.
9. The electrochemical gas probe according to claim 1, wherein the sensing electrode is in contact with a mixture of a second metal and an oxide of the second metal.
10. The electrochemical gas probe according to claim 9, wherein the second metal includes a material selected from the group consisting of Ti, Zr, Ca, Mn, Fe, and Ni.
11. The electrochemical gas probe according to claim 1, wherein the sensing electrode is in contact with a carbon powder.

12. The electrochemical gas probe according to claim 1, wherein the sensing unit further includes a gas-tight ceramic lid for protecting the solid-state reference mixture.

13. The electrochemical gas probe according to claim 1, wherein the molten metal is either aluminum or zinc.

14. The electrochemical gas probe according to claim 1, wherein the sensing unit and supporting unit are physically and electrically separatable.